

Appendix 1: Myiasis in Canada

Table 1. Reported cases of local myiasis due to Cuterebrid botflies in Canada

Case no.	Region of acquisition	Age (years)	Domicile location	Number of domiciles	Number of larvae per domicile	Method of extraction
1	Manawaki, Quebec	12	Face	1	1	Not reported
2	Muskoka, Ontario	12	Cheek	1	1	Manual pressure
3	Northern Ontario	22	Mouth	1	1	Coughing
4	Scarborough, Ontario	13	Forehead	1	1	Manual pressure
5	Ontario	2	Scalp	1	1	Manual pressure
6	Eastern Ontario	3	Cheek	1	1	Manual pressure
7	Muskoka, Ontario	1	Back	1	1	Manual pressure
8	Northern Ontario	49	Under eye	1	1	Occlusion 30 mins
9	Central Ontario	45	Under eye	1	1	Manual pressure

Table 2. Comparison of local and imported cases of cutaneous myiasis in Canada

Infection type	Autochthonous								Imported		
Species	<i>Cuterebra</i> spp.	<i>Hypoderma</i> spp.	<i>Gastrophilus intestinalis</i>	<i>Wohlfahrtia</i> spp.	<i>Sarcophaga crassipalpis</i>	<i>Phaenicia sericata</i>	<i>Phormia regina</i>	<i>Dermatobia hominis</i>	<i>Cordylobia</i> spp.	<i>Oestrus ovis</i>	
Region of acquisition	North America	North America	North America	North America	North America	North America	North America	Central and South America	Africa	Hawaii	
Domicile location	Scalp, under eye, face, cheek, mouth, shoulder, chest, back	Eye, mouth, neck, shoulders, chest, leg	Arm	Under eye, face, neck, shoulders, chest, arms, genitalia	Toe	Chest	Hips	Scalp, cheek, shoulders, chest, leg	Neck, shoulders, chest, abdomen, arms	Eye	
No. of domiciles	1	3	1	1-14	1			1-3	1-28	1	
No of larvae per domicile	1	1	1	1-5	9	12	Several to hundreds	1-2	1	2	
Clinical features	Subcutaneous migration of early larval stages, cutaneous swelling, furuncular lesion with a central punctum exposing the larva's spiracles, Impaired vision if infection is in eye	Subcutaneous migration of early larval stages, cutaneous swelling, furuncular lesion with a central punctum exposing the larva's spiracles, Impaired vision if infection is in eye	Creeping myiasis: larvae migrate under the skin and leave abehind a narrow linear inflammatory tracts	Furuncular lesion with a central punctum through which the larva can be seen, discharge of pus. Common in infants	Fly was attracted to persistent sore on toe	Breastfeeding complications	Fly was attracted to necrotic wound	Cutaneous swelling, furuncular lesion with a central punctum exposing the larva's spiracles, discharge of pus	Cutaneous swelling, furuncular lesion with a central punctum exposing the larva's spiracles, discharge of pus	Impaired vision if infection is in eye	
Mode of extraction	Occlusion 30 mins, manual pressure	Manual pressure; surgical operation	Procaine and adrenalin; with needle, after application of machine oil	Manual pressure/ manual picking	Manual picking	Manual pressure	Manual picking	Occlusion, manual pressure	Occlusion 45 mins, manual pressure	Manual picking	

References

1. Ahmet AH, Krafchik BR. The unidentified parasite: A probable case of North American cuterebrid myiasis in a pediatric patient. *Pediatr Dermatol* 2004;21:515.
2. Baird JK, Baird CR, Sabrosky CW. North American cuterebrid myiasis—Report of seventeen new infections of human beings and review of the disease. *J Am Acad Dermatol* 1989;21:763.
3. Gyorkos TW. Unusual parasitic infections. *Can Med Assoc J* 1977;117:1134.
4. Schiff TA. Furuncular cutaneous myiasis caused by *Cuterebra* larva. *J Am Acad Dermatol* 1993;28:261.
5. Scholten T, Brunsdon D, Rogan W, Richards R. Three unusual cases of parasitic infections. *Can Med Assoc J* 1977;117:368.
6. Scholten T, Chrom V. Myiasis due to *Cuterebra* in humans. *Can Med Assoc J* 1979;120:1392.
7. Slinger R, Scholten T. Facial furuncle on 3-year-old boy camping in Ontario. *Can Med Assoc J* 2003;168:1159.
8. Williams DJ, Wharton S, Ravandi A, Achong M. Cutaneous myiasis of the eyelid masquerading as periorbital cellulitis. *Emerg Med J* 2006;23:737.
9. Ali Khan FEA, Ali Khan Z. A case of traumatic dermal myiasis in Quebec caused by *Phormia regina* (Diptera: Calliphoridae). *Can J Zool* 1975;53:1472.

10. Ali-Khan FEA, Ali-Khan Z. Two cases of human *Sarcophaga* (Diptera: Sarcophagidae) myiasis in Quebec, with descriptions of the larvae. *Can J Zool* 1974;52:643.
11. Austmann KJ. Creeping eruption. *JAMA* 1926;87:1196.
12. Bedford GV, Williams DH, Newton MVB. Creeping eruption with special reference to cutaneous myiasis and report of a case. *Can Med Assoc J* 1933;28:377.
13. Boggild AK, Keystone JS, Kain KC. Furuncular myiasis: A simple and rapid method for extraction of intact *Dermatobia hominis* larvae. *Clin Infect Dis* 2002;35:336.
14. Caissie R, Beaulieu F, Giroux M, Berthod F, Landry PÉ. Cutaneous myiasis: diagnosis, treatment, and prevention. *J Oral Maxillofac Surg* 2008;66(3):560-568.
15. Chown G. Report of a case of cutaneous myiasis in an infant, *Wohlfahrtia vigil* (Walker) infection. *Can Med Assoc J* 1924;14:967.
16. Corrigan SH, Corrigan CE. Three cases of creeping myiasis in Saskatchewan. *Can Med Assoc J* 1925;15:403.
17. Corrin R, Scholten T, Earle J. Ocular myiasis—Mobile conjunctival foreign body. *Can Med Assoc J* 1985;132:1291.
18. Dalton MT, Haldane DJ. Unusual dermal arthropod infestations. *Can Med Assoc J* 1990;143:113.
19. Ford M. Further observations on the behavior of *Wohlfahrtia vigil* (Walker) with notes on the collecting and rearing of the flies. *J Parasitol* 1936;22:309.

20. Ford M. Observations on the behavior of the sarcophagid fly, *Wohlfahrtia vigil* (Walk.). *J Parasitol* 1932;19:106.
21. Groot de HBS. Myiasis in Canada. *Can Med Assoc J* 1956;75:673.
22. Hall M, Wall R. Myiasis of humans and domestic animals. *Adv Parasitol* 1995;35:257.
23. Hannam P, Khairnar K, Downey J, Powis J, Ralevski F, Pillai DR. Cutaneous Myiasis in Traveler Returning from Ethiopia. *Emerg Infect Dis* 2011;17(12):2385.
24. Haufe WO, Nelson WA. Human furuncular myiasis caused by the flesh fly *Wohlfahrtia opaca* (Coq.) (Sarcophagidae: Diptera). *Can Entomol* 1957;89:325.
25. Hunt BR, Edwards P. Dermal myiasis in eastern Canada. *Can Med Assoc J* 1951;64:69.
26. Israels S, Shuman B. Myiasis dermatosa in infancy. *Pediatrics* 1949;4:665.
27. Jacobs B, Brown DL. Cutaneous furuncular myiasis: Human infestation by the botfly. *Can J Plast Surg* 2006;14(1):31.
28. Johnston M, Dickinson G. An unexpected surprise in a common boil. *J Emerg Med* 1996;14:779.
29. Lagacé-Wiens PR, Dookeran R, Skinner S, Leicht R, Colwell DD, Galloway TD. Human ophthalmomyiasis interna caused by Hypoderma tarandi, Northern Canada. *Emerg Infect Dis* 2008;14(1):64.
30. Lewis L. Cutaneous myiasis occurring in western Canada. *Can Med Assoc J* 1947;56:319.

31. Li Loong PT, Lui H, Buck HW. Cutaneous myiasis: A simple and effective technique for extraction of *Dermatobia hominis* larvae. *Int J Dermatol* 1992;31:657.
32. Mackenzie EA. Phimosis from the flesh fly, *Wohlfahrtia vigil*. *Can Med Assoc J* 1946;54:52.
33. McIver SB, Dutta PC, Freeman RS. Cutaneous myiasis by *Dermatobia hominis*. *Can Med Assoc J* 1971;104:771.
34. Miller MJ, Lockhart JA. Hypodermal myiasis caused by larvae of the Ox-warble (*Hypoderma bovis*). *Can Med Assoc J* 1950;62:592.
35. O'Rourke FJ. Furuncular myiasis due to *Wohlfahrtia vigil* (Walker). *Can Med Assoc J* 1954;71:146.
36. Rice DA, Nelson WA. Human myiasis caused by the greenbottle fly, *Phaenicia sericata* (Meigen). *Can Med Assoc J* 1956;75:839.
37. Walker EM. Some cases of cutaneous myiasis, with notes on the larvae of *Wohlfahrtia vigil* (Walker). *J Parasitol* 1922;9:1.
38. Walker EM. *Wohlfahrtia vigil* (Walker) as a human parasite (Diptera: Sarcophagidae). *J Parasitol* 1920;7:1.